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ART & BODY

CLAIMS

SUBA17

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- 5 1. Communication device comprising a housing enclosing at least one loudspeaker (2) and at least part of at least one antenna (1) inside the housing (8), said at least one loudspeaker comprising an acoustic resonance chamber (9) and said at least one antenna comprising at least one electromagnetic resonance chamber (13),
- 10 characterised in that
- the acoustic resonance chamber (9) is completely or partly located within the electromagnetic resonance chamber (13).
- 15 2. Communication device according to claim 1, characterised in that the at least one antenna (1) is a directive patch antenna.
- 20 3. Communication device according to claim 1 or 2, characterised in that at least one antenna (1) is a dual band antenna.
- 25 4. Communication device according to claims 1-3, characterised in that the at least one antenna (1) defines the walls of the acoustic resonance chamber (9) completely or partly.
- 30 5. Communication device according to claims 1-4, characterised in that the loudspeaker (2) is coupled with the resonance chamber by means of at least one acoustic channel.

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- 6. Communication device according to claims 1-5, characterised in that at least one antenna (1) is a coil or loop-antenna, preferably a directive coil or loop antenna.
- 7. Communication device according to claims 1-6, characterised in that the acoustic resonance chamber (9) is a pressure chamber.
- 10 8. Communication device according to claims 1-7, characterised in that the acoustic resonance chamber (9) has acoustic openings to the exterior.
- 15 9. Communication device according to claims 1-8, characterised in that the dimension of the acoustic resonance chamber (9) completely or partly located within the electromagnetic resonance chamber is 0.5 to 8 cm³.
- 20 10. Communication device according to claims 1-9, characterised in that the shared resonance chamber is on the inside being reinforced by reinforcement elements or walls dividing the chamber into smaller volumes.
- 25 11. Communication device according to claims 1-6, characterised in that said acoustic resonance chamber (9) is completely or partly located within the electromagnetic resonance chamber (13), wherein said loudspeaker (2) and said acoustic resonance chamber (9) are separated by means of at least one electromagnetic screen (11), said loudspeaker and said acoustic resonance chamber are acoustically connected through said electromagnetic screen by means of at least one acoustically coupling means (10).
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12. Communication device according to claim 11, characterised in that said screen is the ground plane (11) of the antenna (1).

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13. Communication device according to claim 11, characterised in that the loudspeaker (2) is coupled with the acoustic resonance chamber (9) by means of at least one acoustic channel (10) passing through said screen (11).

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14. Communication device according to claim 11, characterised in that the channel consists of one or more holes (10) in said screen (11).

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15. Communication device according to claim 14, characterised in that the number of holes is between 1 and 50, preferably 4 holes.

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16. Communication device according to claim 15, characterised in that the diameter of the one or more holes is between 0,5 and 5 mm, preferably 2 mm.

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17. Communication device according to claims 1-6, characterised in that said acoustic resonance chamber (9) is completely or partly located within the electromagnetic resonance chamber (13) and that the acoustic resonance chamber or at least the main part of the acoustic resonance chamber is located at a distance from said loudspeaker (2).

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18. Communication device according to claims 1-6, characterised in that said acoustic resonance chamber (9)

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is completely or partly located within the electromagnetic resonance chamber (13) and that the loudspeaker and the acoustic resonance chamber is connected by at least one acoustic coupling means (10).

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19. Communication device according to claim 17 or 18, characterised in that the acoustic coupling means is at least one acoustic channel.

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